



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/661,429	09/13/2000	Simon Fafard	99388-US	8408

23553 7590 08/14/2003

MARKS & CLERK  
P.O. BOX 957  
STATION B  
OTTAWA, ON K1P 5S7  
CANADA

EXAMINER

NGUYEN, JOSEPH H

ART UNIT PAPER NUMBER

2815

DATE MAILED: 08/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/661,429

Applicant(s)

FAFARD, SIMON

Examiner

Joseph Nguyen

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 03 December 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Art Unit: 2815

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook in view of Petroff et al.

Regarding claim 1, Cook discloses on figure 2 substantially all the structure set forth in the claimed invention except said self assembled quantum structures being selected from the group consisting of quantum dots and quantum wires. However, Petroff et al discloses on figure G said self assembled quantum structures 108 being selected from the group consisting of quantum dots and quantum wires. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cook by having said self assembled quantum structures being selected from the group consisting of quantum dots and quantum wires for the purpose of providing a reliable semiconductor laser device.

Regarding claims 2-5, Cook and Petroff et al together disclose all the structure set forth in claims 2-5.

Art Unit: 2815

Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook and Petroff et al as applied to claim 5 above, and further in view of Romano et al.

Regarding claim 6, Cook and Petroff et al disclose substantially all the structure set forth in the claimed invention except a wetting layer underneath the low dimensional structures. However, Romano et al discloses on figure 2 a wetting layer 220 underneath the low dimensional structures 250. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cook and Petroff et al by having a wetting layer underneath the low dimensional structures for the purpose of promoting smooth, uniform overage of the substrate as taught by Romano et al (col. 4, lines 36-40).

Regarding claim 7, the claim limitation is functional language and therefore not given patentable weight.

Claims 8-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook and Petroff et al and Romano et al as applied to claim 7 above, and further in view of Sugiyama.

Regarding claim 8, Cook and Petroff et al and Romano et al disclose substantially all the structures set forth in the claimed invention except intermediate layers between the active region and the electron and hole emitting layers. However, Sugiyama discloses intermediate layers between the active region and the electron and hole emitting layers (col. 5, lines 4-15). In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

Art Unit: 2815

Cook and Petroff et al and Romano et al by having intermediate layers between the active region and the electron and hole emitting layers for the purpose of improving the performance of a semiconductor laser.

Regarding claims 9-10, Cook and Petroff et al and Romano et al and Sugiyama disclose substantially all the structure set forth in the claimed invention except the laser diode consisting mainly of gallium, indium, aluminum, arsenic, nitrogen and phosphorous. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cook and Petroff et al and Romano et al and Sugiyama by having the laser diode consisting mainly of gallium, indium, aluminum, arsenic, nitrogen and phosphorous for the purpose of improving the performance of a semiconductor laser diode, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding claims 11-16, Cook and Petroff et al and Romano et al and Sugiyama disclose substantially all the structure set forth in the claimed invention except the graded compositions of electron and hole emitting layers, active region and barrier layers. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Cook and Petroff et al and Romano et al and Sugiyama by having the graded compositions of electron and hole emitting layers, active region and barrier layers for the purpose of improving the performance of a semiconductor laser diode, since it has been held that discovering an optimum value of

Art Unit: 2815

a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 17-20, Cook and Petroff et al and Romano et al and Sugiyama disclose substantially all the structure set forth in the claimed invention.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

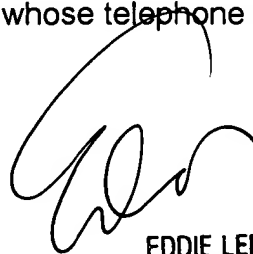
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (703) 308-1269. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 308-7382 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JN  
August 1, 2003



EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800